IBRAGIMOV, I.A.; FARZANE, N.G.; MAKHMUDOV, Yu.A.; ALIYEV, G.Kh.

Method for centralized calculations of gas consumption using computer techniques. Izv. vys. ucheb. zav.; neft' i gaz 6 no.4:87-92 '63. (MIRA 16:7)

(Electronic computers)
(Automatic control)
(Gas, Natural)

L 18292-65 EWT(1)/EPA(s)-2 IJP(c)/ASD(a)-5/RAEM(a)/AS(mp)-2/AFWL/SSD/ESD(gs)/ESD(t)

ACCESSION NR: AR5000802 S/0058/64/000/010/E065/E066

AUTHOR: Farztdinov, M. M.

SOURCE: Ref. zh. Fizika. Abs. 10E513

TITLE: Concerning the equations of motion of the magnetization of the sublattices in antiferromagnets

CITED SOURCE: Uch. zap. Sterlitamaksk. gos. ped. in-t., vyp. 11, 1963, 146-152

TOPIC TAGS: antiferromagnetism, magnetization, crystal lattice structure, Zeeman energy, magnetostatic interaction

TRANSLATION: An antiferromagnet is considered, having two sublattices and state described in the case of the phenomenological approach, by the magnetizations $\vec{M}_1$ and $\vec{M}_2$ of the individual sublattices. The author introduces for convenience the antiferromagnetism

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L 18292-65
ACCESSION NR: AR5000802

vector $\vec{l}$ and the average magnetic moment of the lattice $\vec{m}$, which are connected with $\vec{M}_1$ and $\vec{M}_2$ by the relations $\vec{m} = (\vec{m}_1 + \vec{m}_2)/2$, $\vec{l} = (\vec{m}_1 - \vec{m}_2)/2$, where $\vec{m}_1 = \vec{M}_1/M_0$, $\vec{m}_2 = \vec{M}_2/M_0$, $l^2 + m^2 = 1$, $\vec{l}\cdot\vec{m} = 0$. Phenomenologically, the Hamiltonian of the antiferromagnet includes the exchange interaction with allowance for the spatial inhomogeneity of the vectors $\vec{l}$ and $\vec{m}$, the anisotropy energy, the Zeeman energy, and the magnetostatic interaction. The equations of motion are obtained for the vectors $\vec{l}$ and $\vec{m}$, and also the commutation relations for the operators $\hat{l}$ and $\hat{m}$, corresponding to these vectors in the case of application of the method of second quantization in the Goldstein-Primakoff representation; the determination of the elementary excitations of the system is simplified as a result. Yu. Rudoy.

SUB CODE: EM, SS ENCL: 00

Card 2/2

40-22-2-21/21

AUTHOR: Farzetdinov, M.M. (Sterlitamak)

TITLE: On the Uniqueness of the Solutions of the Equation for Weak, Stationary Heat Convection (O yedinstvennosti resheniy uravneniya slaboy statsionarnoy teplovoy konvektsii)

PERIODICAL: Prikladnaya matematika i mekhanika, 1958, Vol 22, Nr 2, pp 286-288 (USSR)

ABSTRACT: In the paper the author proves the uniqueness of the solutions of certain problems of stationary heat convection. The equations in which hold for weak stationary heat convection are in vector form

$$(\vec{v}.\nabla)\vec{v} = -\nabla p - \nabla\times\nabla\times\vec{v} - \lambda\gamma\theta$$

$$\sigma\vec{v}\nabla\theta = \Delta\theta \quad ; \quad \operatorname{div}\vec{v} = 0$$

They have to be completed by an equation for the heat conduction within the medium which encloses the liquid to be investigated. This equation has the form :

$$\Delta\theta = 0 .$$

It is assumed that the liquid fills a range of arbitrary form within a massive solid, infinitely large body. In a sufficiently great distance from the range filled with liquid the body

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On the Uniqueness of the Solutions of the Equation for Weak, Stationary Heat Convection

40-22-2-21/21

is to possess a constant temperature gradient. After formulating the boundary conditions the author seeks the solutions for the velocity distribution, the pressure and the temperature in form of series. By substituting the series into the initial equation the problem is reduced to the solution of a system of linear differential equations. From these differential equations single terms of the series can be determined, and the author shows that the solution thus obtained is unique. The proof, however, only holds for such Grasshof numbers for which the series converge absolutely and uniformly.
There are 5 Soviet references.

SUBMITTED: March 10, 1956

1. Heat transfer--Mathematical analysis 2. Convection--Mathematical analysis

Card 2/2

USCOMM-DC-55934

FARZETDINOV, M.M.; MULLAGULOV, M.Kh.

Industrial training of students in teachers' colleges. Politekh. obuch. no.2:60-63 F '59. (MIRA 12:3)

1. Pedagogicheskiy institut, g. Sterlitamak.
(Technical education)

FARZETDINOV, M.M.

Heat transmission through a rotating cylinder located inside a solid mass. Insh.-fiz.zhur. no.10:82-87 O '59.
(MIRA 13:2)

1. Pedagogicheskiy institut, g.Sterlitamak.
(Heat--Transmission)

84323
S/170/60/003/009/019/020X
B019/B060

11.92.00

AUTHOR: Farztdinov, M. M.

TITLE: Heat Transfer Through a Rotating Cylindrical Body

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 9, pp. 117-119

TEXT: The author has shown in a previous paper (Ref. 1) that heat transfer through a homogeneous rotating cylinder of a given temperature gradient gives rise to temperature waves which can be described by equation (1). In the same previous work, the functions F_1 and F_2 appearing in (1) were represented as infinite series of Bessel functions. With a view to simplifying calculations, the representation of these functions by their real and imaginary parts is first discussed here. The study is extended to the propagation of temperature waves from the surface of the rotating body toward the axis, and the wavelength along the radius is found not to remain constant. On examining the penetration depth of temperature waves the author found that this depth will be small with

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Heat Transfer Through a Rotating Cylindrical Body

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B019/B060

rapid cylinder rotation and poor thermal diffusivity. Expressions are given for the wavelengths of the azimuthal and radial components of the temperature waves. There are 2 Soviet references.

ASSOCIATION: Pedagogicheskiy institut, g. Sterlitamak
(Pedagogical Institute, Sterlitamak)

SUBMITTED: March 15, 1960

Card 2/2

88005

S/170/60/003/012/002/015
B019/B056

11.9200

AUTHOR: Farztdinov, M. M.

TITLE: The Problem of Measuring the Complex Temperature Field of Walls in Convective Heat Exchange

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 12, pp. 11-16

TEXT: The present considerations are based on an investigation of the temperature field in a unilaterally limited, infinitely extended solid body with the thermal conductivity λ_1, which, on its boundary, is in convective heat exchange with a liquid. Perpendicular to the interface of these two media there is a straight rod with circular cross section, whose thermal conductivity coefficient is λ. At a sufficient distance from the rod a constant temperature drop is assumed perpendicular to the interface in the body, and further a convective heat exchange between the front surface of the rod and the liquid is assumed. On the basis of thermodynamical considerations, an expression is developed by means of this

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88005

The Problem of Measuring the Complex Temperature Field of Walls in Convective Heat Exchange

S/170/60/003/012/002/015
B019/B056

model for corrections in the temperature measurement of walls by means of thermocouples. By means of this expression, the exact temperature in the most various cases may be determined. The expression for the difference between the temperature of the thermocouple and the temperature at the measuring point reads:

$$AR\left\{\left(\frac{\lambda_\ell}{\alpha_\ell R} - \frac{\lambda}{\alpha R}\right) + \frac{\lambda}{\lambda_\ell}\left(1 - \frac{\alpha_\ell}{\alpha}\right)\frac{a}{AR}\, e^{-p^2R^2}\right\}.$$

Here R is the radius of the rod, and A is a constant. The author thanks Docent G. F. Shaydurov for discussions. There are 1 figure and 5 Soviet references.

ASSOCIATION: Gosudarstvennyy pedagogicheskiy institut, g. Sterlitamak (State Pedagogical Institute, Sterlitamak)

SUBMITTED: March 30, 1960

Card 2/2

FARZETDINOV, M.M.

S/040/60/024/03/18/020
82126
C 111/ C 333

24.5200

AUTHOR: Farzetdinov, M. M. (Sterlitamak)

TITLE: Stationary Heat Convection in a Round Horizontal Tube With Harmonically Variable Cross Section

PERIODICAL: Prikladnaya matematika i mekhanika, 1960, Vol. 24, No. 3, pp. 563-565

TEXT: Let z be the horizontal tube axis, x the vertical axis. Let the tube form a hollow space in an infinite solid massive; let the surface S of the tube have the equation

$$(1.1) \quad x^2 + y^2 = R^2 (1 + \varepsilon f)^2, \quad (f(z) = \sin \omega z, \quad \omega = \frac{2\pi}{\lambda},$$

$$\varepsilon = \frac{a}{R} < 1),$$

where R is the mean tube radius and a the deviation of the radius from R. The author considers the stationary heat convection for lateral heating. The usual equations for convection are set up for the following boundary conditions: 1.) The velocity of the fluid in the tube is equal to 0 on S. 2.) The temperature and the heat flow are continuous on S. 3.) In the massive there is given a constant temperature gradient

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S/040/60/024/03/18/020
B2126
C 111/ C 333

Stationary Heat Convection in a Round Horizontal Tube With Harmonically Variable Cross Section

(in the direction of the x-axis) in a large distance of the tube.

For the solution of the problem the author introduces at first the coordinates

$$(2.1)\quad \bar{x} = \frac{x}{1 + \varepsilon f(z)}, \qquad \bar{y} = \frac{y}{1 + \varepsilon f(z)}, \qquad \bar{z} = z$$

and then nondimensional coordinates (with respect to R). After the introduction of the new coordinates terms with higher powers of ε are neglected. The arising approximative system is solved by setting up all magnitudes as power series in the Grashof number. An explicit performance of the proposed method is not carried out.

There are 3 Soviet references.

ASSOCIATION: Permskiy universitet (Perm University)

SUBMITTED: January 30, 1959

Card 2/2

21775
S/170/61/004/004/006/014
B108/B209

11.9200

AUTHOR: Farztdinov, M. M.

TITLE: The three-dimensional boundary layer during free convection in cavities

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 4, 1961, 38 - 42

TEXT: The author presents the equations of a three-dimensional laminar boundary layer taking into account the finite thickness of the latter as well as the flow of the liquid outside the dynamical boundary layer. For the calculation of practically important convection problems with high Rayleigh numbers (10^4 - 10^9) it is interesting to establish the equations of steady convection in arbitrary cavities, assuming a laminar boundary layer. Outside the dynamical boundary layer, viscosity is neglected, and outside the thermal boundary layer, temperature is assumed to be a constant quantity. The author regards cavities with continuously curved surface S, with $\vec{r} = \vec{r}(\xi, \eta)$ (1), where ξ and η are the curvilinear coordinates. $\vec{n}$ denotes the vector normal upon S, ζ - the coordinate in its di-

Card 1/6

The three-dimensional boundary ...

rection. The boundary conditions are the usual ones. The unit length l is chosen as the characteristic length of the cavity; the corresponding units of velocity, pressure, and temperature are

$$\chi l^{-1} R^{\frac{1}{2}},\ \chi^2 l^{-2} \rho_0 R,\ Al\,\mathrm{Pr}^{-1},$$

where R = PrGr denotes the Rayleigh number and A the temperature gradient to infinity outside the cavity. The following are the equations for the three-dimensional laminar boundary layer in the case of free convection:

$$\frac{u}{h_1}\frac{\partial u}{\partial \xi} + \frac{v}{h_2}\frac{\partial u}{\partial \eta} + w\frac{\partial u}{\partial \zeta} + \frac{uv}{h_1 h_2}\frac{\partial h_1}{\partial \eta} - \frac{v^2}{h_1 h_2}\frac{\partial h_2}{\partial \xi} = -\frac{1}{h_1}\frac{\partial p}{\partial \xi} + \frac{\mathrm{Pr}}{\sqrt{R}}\frac{\partial^2 u}{\partial \zeta^2} + \frac{1}{h_1}\frac{\partial z}{\partial \xi}\vartheta, \qquad (3)$$

Card 2/6

The three-dimensional boundary ...

$$\frac{u}{h_1}\frac{\partial v}{\partial \xi}+\frac{v}{h_2}\frac{\partial v}{\partial \eta}+w\frac{\partial v}{\partial \zeta}-\frac{u^2}{h_1 h_2}\frac{\partial h_1}{\partial \eta}+\frac{uv}{h_1 h_2}\frac{\partial h_2}{\partial \xi}=$$

$$=-\frac{1}{h_2}\frac{\partial p}{\partial \eta}+\frac{\mathrm{Pr}}{\sqrt{\mathrm{R}}}\frac{\partial^2 v}{\partial \zeta^2}+\frac{1}{h_2}\frac{\partial z}{\partial \eta}\vartheta, \qquad (4)$$

$$u^2 k_1+v^2 k_2=-\frac{\partial p}{\partial \zeta}+\frac{\partial z}{\partial \zeta}\vartheta, \qquad (5)$$

$$\frac{1}{h_1}\frac{\partial u}{\partial \xi}+\frac{1}{h_2}\frac{\partial v}{\partial \eta}+\frac{\partial w}{\partial \zeta}+\frac{u}{h_1 h_2}\frac{\partial h_2}{\partial \xi}+\frac{v}{h_1 h_2}\frac{\partial h_1}{\partial \eta}=0, \qquad (6)$$

$$\frac{u}{h_1}\frac{\partial \vartheta}{\partial \xi}+\frac{v}{h_2}\frac{\partial \vartheta}{\partial \eta}+w\frac{\partial \vartheta}{\partial \zeta}=\frac{1}{\sqrt{\mathrm{R}}}\frac{\partial^2 \vartheta}{\partial \zeta^2}, \qquad (7),$$

where u, v, w are the components of the velocity $\vec{v}$, ϑ - the temperature relative to the mean temperature in the flow center, p - the pressure cal-

Card 3/6

The three-dimensional boundary ...

culated from $p_0 = p(\vartheta_0)$, h_1, h_2 - the Lamé factors on S; k_1, k_2 - the principal curvatures of S. . The OZ axis is directed vertically downwards. In the determination of the pressure, the terms on the left side of Eq. (5) are insignificant and may therefore be neglected. Eq. (5) shows that temperature and pressure vary across the thermal boundary layer, i.e. in difference from an isothermal boundary layer, pressure cannot be treated as a constant. The liquid in the flow center is assumed to be perfect, and temperature to be constant. The dimensionless velocity and pressure quantities in this region are denoted by $\vec{v}'$ (u', v', w') and p', respectively. In that case, Euler's equation for the motion of the liquid has the form

$$\frac{1}{2}\nabla \vec{v}'^2 - [\vec{v}' \times \operatorname{curl} \vec{v}'] = \nabla (p' + \vec{\gamma}\vec{r}\,\delta) \quad (8),$$

where $\vec{\gamma}$ is the unit vector in the direction of gravity; $\delta = \Phi R^{-1}$; $\Phi = \nu^{-2} g l^3$ - a dimensionless parameter, ν - coefficient of kinetic viscosity, g - gravitational acceleration. In the following, the thickness of the dynamical and of the thermal boundary layer is denoted by $\delta_Д$ and δ_T, respectively. The flow in the center is connected with that in the boundary

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21775
S/170/61/004/004/006/014
B108/B209

The three-dimensional boundary ...

layer by the conditions $\vec{v} = \vec{v}'$, $\vec{\sigma}_n = \vec{\sigma}'_n$ (9) at $\zeta = \delta_д$, or, more explicitly, by $p = p'$, $\frac{\partial u}{\partial \zeta} = \frac{\partial v}{\partial \zeta} = 0$ at $\zeta = \delta_д$ (10). The boundary condition for the thermal boundary layer is $T = 0$ (11) at $\zeta = \delta_т$. Using the relation of similarity, the author calculated the mean Nusselt number. For this purpose, he introduces the transformations $w = Pr^{1/2}R^{-1/4}w^x$; $\zeta = Pr^{1/2}R^{-1/4}\zeta^x$ into Eqs. (3) - (7). The solution of these equations has the form

$$\theta = A l Pr^{-1} \theta\left(l^{-1}\xi,\ l^{-1}\eta,\ R^{\frac{1}{4}} Pr^{-\frac{1}{2}} l^{-1}\zeta,\ Pr\right).$$

The following relation is obtained for the Nusselt number, averaged over the entire surface of the cavity: $Nu = CR^{1/4}f(Pr)$, where $f(Pr)$ is an unknown function of the Prandtl number Pr; C - a constant independent of Pr and R. Since in convection the motion is slow even for considerable temperature differences, the inertial terms in Eqs. (3) - (5) may be neglected. When the transformations

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The three-dimensional boundary ...

$$p = \mathrm{Pr}\, p^x, \qquad \zeta = R^{-\frac{1}{4}} \zeta^x, \quad \theta = \mathrm{Pr}\, \theta^x,$$

are introduced into these simplified relations, the corresponding equations and boundary conditions will no longer contain the parameters Pr and R. In this case, $Nu = CR^{1/4}$. In conclusion, the author thanks Docent G. Z. Gershuni for his discussions to the present study. There are 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Pedagogicheskiy institut, g. Sterlitamak
(Pedagogical Institute, Sterlitamak)

SUBMITTED: May 28, 1960

Card 6/6

FARZTDINOV, M.M.

Measuring the complex temperature field of walls in convective heat exchange. Inzh.-fiz. zhur. no. 12:11-16 D '61.
(MIRA 14:3)

1. Gosudarstvennyy pedagogicheskiy institut, g. Sterlitamak.
(Thermocouples)
(Temperature--Measurement)

S/126/62/013/003/002/023
E039/E135

24.7900

AUTHOR: Farztdinov, M.M.

TITLE: Influence of the anisotropic g-factor on the properties of ferromagnetics

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.3, 1962, 333-339

TEXT: On the basis of the ferromagnetic theory of spin waves the dependence of magnetisation M on temperature T in an external field H is calculated for a uniaxial ferromagnetic possessing anisotropic magneto-mechanical relations (g-factor). The temperature dependence of the first anisotropic constants is obtained and also an effective g-factor. The relation between the magnetic vector for local magnetisation M(r) and the moment of inertia I(r) is given by

$$M = gI \qquad (1)$$

where: $g = \beta_0 \Gamma$ and has tensor characteristics; Γ is the magneto-mechanical factor. According to the general theory of tensors $g_{\alpha\beta}$ defines a class of crystallographic symmetry, for

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example, for a series of uniaxial crystals (6:m, 4:m, 3:m, 6, 4, 6, 4, 3) we have the condition $g_{11} = g_{22} \neq g_{33}$, $g_{12} = -g_{21}$, and for the remaining groups of uniaxial crystals $g_{\alpha\beta}$ is a symmetrical tensor. Magnetisation in the direction of the principal axis is given in the form of a Hamiltonian relating the volume energy, the anisotropic energy and the magneto-static energy. Weak oscillations of the vector I about an equilibrium value I_0 are considered and an expression obtained for the spectrum of magnetic oscillations in the diagonal form. The particular cases for a strong field in an arbitrary direction and for the field perpendicular to the crystal axis for arbitrary values of H are considered. It is shown that in the former case, because of the anisotropic g-factor the dependence of magnetisation M on the field H and temperature T is different in different directions relative to the crystalline axis. Acknowledgments are expressed to Ye.A. Turov for advice and comments on the work.

Card 2/3

Influence of the anisotropic ... S/126/62/013/003/002/023
E039/E135

ASSOCIATION: Sterlitamakskiy gosudarstvennyy pedagogicheskiy institut
(Sterlitamak State Pedagogical Institute)

SUBMITTED: May 3, 1961

Card 3/3

ACCESSION NR: AP4023412 S/0048/64/028/003/0590/0595

AUTHOR: Farztdinov, M.M.

TITLE: Domain structure of antiferromagnetic materials with weak ferromagnetism /Report, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May to 5 June 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.3, 1964, 590-595

TOPIC TAGS: magnetic domains, domain structure, domain structure theory, weakly ferromagnetic antiferromagnetic materials, alpha ferric oxide, manganese carbonate, cobalt carbonate

ABSTRACT: The possible types of domain walls and their energies are discussed theoretically for antiferromagnetic materials of the type of α-Fe_2O_3, having weak ferromagnetic properties. The calculations are based on a phenomenological Hamiltonian containing the following terms: a term proportional to the square of the magnetization, m, representing the exchange energy and responsible for the antiferromagnetic ordering; terms quadratic in the gradients of the magnetization and the antiferromagnetic vector, l, representing the exchange energy associated with spatial non-uni-

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ACCESSION NR: AP4023412

formity; terms representing the effect of second, fourth, and sixth order anisotropy; a term representing the interaction energy of the magnetization with the internal field; and a term proportional to the component in the [111] direction of the vector product of the magnetizations of the two sublattices, representing the relativistic interaction responsible for the weak ferromagnetism. In the ground state either m or ℓ will be directed along a second order axis, depending on the relations obtaining between the anisotropy constants. The calculations are limited to the case valid for α-Fe_2O_3, $MnCO_3$ and $CoCO_3$, in which m is parallel to a second order axis. Domain walls can be either perpendicular or parallel to the (111) planes. Those perpendicular to the (111) planes are also perpendicular to a symmetry plane, and can intersect at angles of 60° or 120°. The behavior of m and ℓ within the domain walls is determined from the condition that the energy be minimum, and wall thicknesses and energies are calculated. Variation of m and ℓ within a domain wall consists of rotation through 60°, 120° or 180°, the vectors remaining throughout nearly in the (111) plane. Since the anisotropy in the (111) plane is very small, the domain wall energy is also small, and the formation of domains is energetically favored. The most favorable domain size (in the [111] direction) was found to be about 1 mm in α-Fe_2O_3 and $MnCO_3$, and about 0.1 mm in $CoCO_3$. The order of magnitude of these esti-

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ACCESSION NR: AP4023412

mates would not be changed by including the magnetoelastic energy. Domain formation may be energetically favored also in other weakly ferromagnetic antiferromagnetic materials provided the influence on the domain wall structure of the second order anisotropy coefficient is dominated by that of the anisotropy coefficients of higher order. "I wish to express my gratitude to Ye.A.Turov for his constant interest in the work." Orig.art.has: 15 formulas, 6 figures and 1 table.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR(Institute of Physics of Metals, Academy of Sciences,SSSR); Sterlitamakskiy pedagogicheskiy institut (Sterlitamak Pedagogic Institute)

SUBMITTED: 00 DATE ACQ: 10Apr64 ENCL: 00

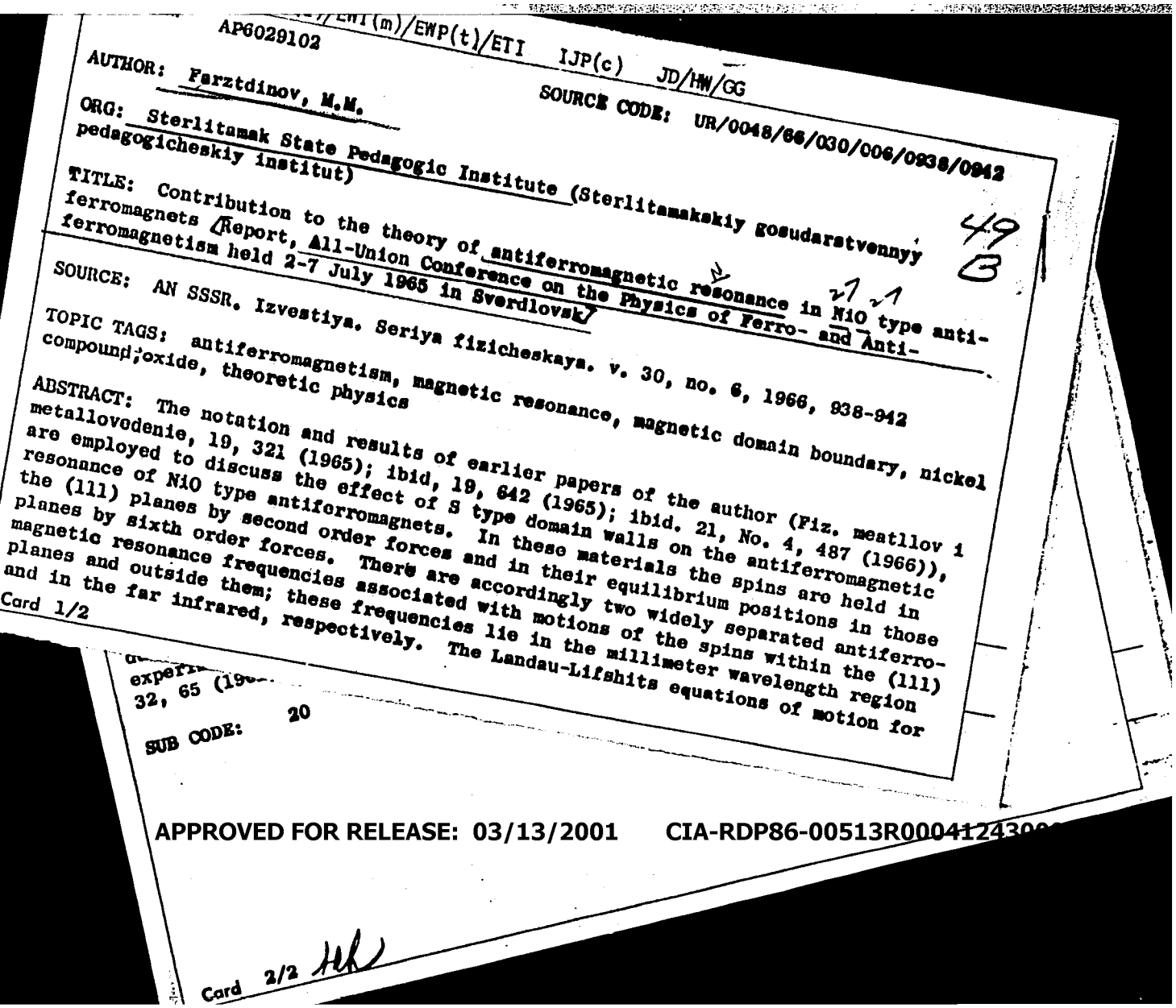
SUB CODE: PH NR REF SOV: 011 OTHER: 010

Card 3/3

FARZTDINOV, M.M.

Conditions for the existence of domain boundaries in antiferromagnetic materials and their stability. Fiz. met. i metalloved. 19 no.6:809-812 Je '65. (MIRA 18:7)

1. Institut fiziki metallov AN SSSR.



AP6029102 /EWT(m)/EWP(t)/ETI IJP(c) JD/HW/GG

AUTHOR: Farztdinov, M.M. SOURCE CODE: UR/0048/66/030/006/0938/0942

ORG: Sterlitamak State Pedagogic Institute (Sterlitamakskiy gosudarstvennyy pedagogicheskiy institut)

TITLE: Contribution to the theory of antiferromagnetic resonance in NiO type antiferromagnets (Report, All-Union Conference on the Physics of Ferro- and Antiferromagnetism held 2-7 July 1965 in Sverdlovsk)

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya. v. 30, no. 6, 1966, 938-942

TOPIC TAGS: antiferromagnetism, magnetic resonance, magnetic domain boundary, nickel compound, oxide, theoretic physics

ABSTRACT: The notation and results of earlier papers of the author (Fiz. metallov i metallovodenie, 19, 321 (1965); ibid, 19, 642 (1965); ibid. 21, No. 4, 487 (1966)), are employed to discuss the effect of S type domain walls on the antiferromagnetic resonance of NiO type antiferromagnets. In these materials the spins are held in the (111) planes by second order forces and in their equilibrium positions in those planes by sixth order forces. There are accordingly two widely separated antiferromagnetic resonance frequencies associated with motions of the spins within the (111) planes and outside them; these frequencies lie in the millimeter wavelength region and in the far infrared, respectively. The Landau-Lifshits equations of motion for

Card 1/2

experi... 32, 65 (19...

SUB CODE: 20

Card 2/2

L 21747-65 EWT(1)/EPA(s)-2 Pt-10 IJP(c)/AFWL/BSD/ASD(a)-5/SSD/
AS(mp)-2/RAEM(a)/ESD(ge)/ASD(t) GG

ACCESSION NR: AP5002310 S/0053/64/084/004/0611/0649

31
B

AUTHOR: Farztudinov, M. M.

TITLE: The structure of antiferromagnets 21

SOURCE: Uspekhi fizicheskikh nauk, v. 84, no. 4, 1964, 611-649

TOPIC TAGS: antiferromagnetism, domain structure, ordered structure, magnetic moment, magnetic property

ABSTRACT: After reviewing briefly the properties and structures of antiferromagnets and ferrimagnets, and the various phenomena observed in these substances by numerous investigators, the author points out that all experimental data point to the existence in antiferromagnets of a domain structure which exerts a decisive influence on magnetostriction, magnetoelasticity, magnetization curves and hysteresis, antiferromagnetic and nuclear magnetic resonance, and other phenomena. The article is thereafter devoted to a review of the results of experimental studies of the domain structure of antiferromagnets. This includes an analysis of the domain structure, the various types of domains and domain boundaries observed in antiferromagnets and the causes of their formation. Experimental meth-

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ACCESSION NR: AP5002310 O

ods of studying the domain structures and the results obtained by these methods are discussed. The conditions for the existence of a domain structure and for its stability are determined. The section headings are: 1. Introduction. 2. Domain structure of antiferromagnets. 2.1. Antiferromagnetic domains and domain boundaries. 2.2. S-domain boundaries. 2.3. Twin domain boundaries. 3. Experimental study of the domain structure of antiferromagnets. 3.1. Neutron diffraction method. 3.2. Optical observations of twin domain structure. 3.3. Study of domains by measuring the torque of a crystal in a magnetic field. 3.4. Study of twin domain structure with the aid of x-rays. 3.5. Observation of magnetic domains in antiferromagnets with weak ferromagnetism. 4. Condition for the existence of a domain structure in antiferromagnets, and its stability. Orig. art. has: 31 figures, 10 formulas, and 4 tables.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: EM, SS

NR REF SOV: 015 OTHER: 045

Card 2/2

L 53692-65 EWT(1)/EPA(s)-2/EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) Pt-7
IJP(c) JD/GG
ACCESSION NR: AP5008778 S/0126/65/019/003/0321/0332
539.292; 548.0:538.01

43
46
B

AUTHOR: Farztdinov, M. M.

TITLE: Domains and S-domain boundaries in antiferromagnetics

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 3, 1965, 321-332

TOPIC TAGS: antiferromagnetic material, domain structure, anisotropy, crystallography

ABSTRACT: Formation of domain boundaries perpendicular to plane (111) is possible in antiferromagnetic materials of the NiO-type. The S_1- boundaries may be 60, 90, 120, or 180°. Domains bounded by S_1- boundaries may be in the form of trihedral or hexahedral prisms or strips parallel to axis [111]. Spins in domains and the transition layer are retained in plane (111) by a strong anisotropy of the second order ($a = 1.4 \times 10^7$ erg/cm^3) and the direction of the spins is determined by a relatively weak anisotropy of the sixth order ($a = 1.5 \times 10^3$ erg/cm^3). The S_1- boundary is formed by rotation of vector l in plane (111), whereas a resulting magnetism in the transition layer does not appear. The low value of the energy density

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of domain boundaries (0.1 erg/cm) is explained by the smallness of the constant of anisotropy in plane (111), which plays the main role in the formation of an S_1-boundary. In a Cr_2O_3-type material domain boundaries S_1 are parallel to axis [111]. If $\sigma < 0$, then the S_1- boundaries are parallel to planes $\phi = \frac{\pi}{3} k$ $(k = 0, 1, \ldots)$ and if $\sigma > 0$, they are parallel to planes $\phi = \frac{\pi}{6} (2k + 1)$ $(k = 0, 1, \ldots)$. The transition layer is formed by the rotation of vector l, which remains parallel to domain boundary S_1, whereby a weak resulting magnetic moment ($m \sim v^2/\sigma^3$) can appear. In uniaxial antiferromagnetics of the Cr_2O_3- and MnF_2-types, the main role in the formation of domain boundaries is played by an anisotropy constant of the second order whereas constants of anisotropy of the fourth and sixth order determine only the position of the grain boundaries. In $CuCl_2 \cdot 2H_2O$-type materials it is possible to have 180° domain boundaries which are parallel to plane (a, b). No resulting magnetism appeare in the transition layer. "In conclusion the authors thank Ye. A. Turov for constant interest in this work and its discussion and to K. B. Vlasov for advice." Orig. art. has: 10 figures, 23 formulas.

L 53692-65

ACCESSION NR: AP5008778

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals AN SSSR)

SUBMITTED: 07Jan64 ENCL: 00 SUB CODE: SS

NO REF SOV: 005 OTHER: 018

Card 3/3

L 4181-66 EWT(m)/EWP(t)/EWP(z)/EWP(b) IJP(c) JD/HW
ACCESSION NR: AP5016522 UR/0126/65/019/006/0809/0812 76
539.292;.548.0 : 538.01 74
B

AUTHOR: Farztdinov, M. M.

TITLE: Existence and stability conditions of domain boundaries in antiferromagnetic materials 16

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 6, 1965, 809-812

TOPIC TAGS: antiferromagnetic material, magnetic domain boundary, Neel temperature, manganese compound, nickel compound, chromium oxide, copper compound, antiferromagnetism, free energy, entropy 27 27

ABSTRACT: To evaluate the thermodynamically favorable conditions of formation of domain boundaries in antiferromagnetic materials, the spectrum of elementary excitations was found. It is shown that for every antiferromagnetic there exists a temperature interval $T_D < T < T_N$ in which the following inequality is obeyed:

$$\Delta F < 0,$$

where ΔF is the free energy increase per unit surface of the domain boundary. Within this interval, the entropy term of the free energy predominates over the energy

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increase in the transition layer, and the formation of domain boundaries in antiferromagnetics is thermodynamically advantageous. In NiO-type antiferromagnetic materials with many axes of antiferromagnetism, the formation of domain boundaries is thermodynamically advantageous over a relatively broad temperature interval; in those with one axis (MnF_2, Cr_2O_3), this interval is much narrower, and is close to the Néel temperature. For certain antiferromagnetics (e. g., $CuCl_2 \cdot 2H_2O$, FeF_2), the above inequality is not fulfilled at all. Values of T_D were calculated for NiO (100°K), MnO (63°K), Cr_2O_3 (260°K), and MnF_2 (64°K) without taking into account possible defects in the crystals; i.e., these values pertain to "pure" crystals, similar to annealed crystals. "I am deeply grateful to Ye. A. Turov for discussing this work." Orig. art. has: 1 table, 16 formulas.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals, AN SSSR)

SUBMITTED: 07Jan64 ENCL: 00 SUB CODE: SS, EM

NO REF SOV: 002 OTHER: 004

PASAN, O.; KAMENICKY, J; KUTNAN, M.

"Geological Survey of the Spis-Gemer Ore Mountains." p. 163 (GEOLOGICKY SBORNIK. Vol. 4, No. 1/2,1953; Bratislava, Czech.)

So: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 4, April 195[illegible], Uncl..

FASEYEV, F. S.

Dissertation defended for the degree of Candidate of Philological Sciences at the Institute of Linguistics

"Modes of Forming Terms in the Tatar Literary Language."

Vestnik Akad. Nauk, No. 4, 1963, pp 119-145

FASHCHEVSKAYA, I.A.

Changes in the morphological composition of the blood under conditions of a dif.cient insulin supply to the liver. Pat. fiziol. i eksp. terap. 9 no.3:45-48 My-Je '65. (MIRA 18:9)

1. Laboratoriya fiziologii zhelez vnutrenney sekretsii (zav.-chlen-korrespondent AMN SSSR prof. Ye.N. Speranskaya) Instituta fiziologii imeni Pavlova (dir. akademik V.N. Chernigovskiy) AN SSSR, Leningrad.

REVYAKIN, V.S.; FASHEVSKIY, B.V.

Quantity of precipitation falling on the territory of the Gorno-Altai Autonomous Province. Izv. Alt. otd. Geog. ob-va SSSR no.5:108 '65. (MIRA 18:12)

1. Tomskiy gosudarstvennyy universitet.

KALYUZHNAYA, R.A., kand.med.nauk; FASHINSKAYA, A.M.

Work practice of district rheumatological consulting rooms in pediatric polyclinics in Moscow. Zdrav.Ros.Feder. 1 no.9:6-10 S '57. (MIRA 10:11)

1. Iz otdela lechebnoy i profilakticheskoy pomoshchi detyam (zav. A.P.Pozdnik) Mosgorzdravotdela
(MOSCOW--RHEUMATIC FEVER)

KALYUZHNAYA, R.A., kand.med.nauk,., PASHINSKAYA, A.M.

Preventing rheumatic fever in children and in connection with first results of the rheumatological divisions of Moscow polyclinics. Sov.med. 22 no.9:135-143 S'58 (MIRA 11:11)

1. Iz otdela lechebnoy i profilakticheskoy pomoshchi detyam (zav. A.P. Poznyak) Mosgorzdravotdela.
(RHEUMATIC FEVER, in inf. & child prev. (Rus))

FASHKEVICH, K.V.

Automatic centerless grinding machines for small drills. Biul. tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh.inform. no.12: 51-53 '63. (MIRA 17:3)

FASHMUKHOV, A.; NAUROZOKOV, O.

Grading seed corn. Muk.-elev. prom. 22 no.8:28 Ag '56.(MLRl 10:8)

1. Kabardinskaya respublikanskaya kontora Zagotzerno.
(Corn (Maize))

FASHKEVICH, G.I.

VSh-145D automatic ball-grinding machine. Biul.tekh.-ekon. inform.Gos.nauch.-issl.inst.nauch. i tekh.inform. no.3:36-37 '63. (MIRA 16:4)

(Grinding machines)

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The VSh-182 automatic two-way face-grinding machine. Biul. tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch. i tekh.inform. no.10:45-46 '62. (MIRA 15:10)

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FASHKEVICH, K.V.

VSh-66 face-grinding machine. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch. i tekh.inform. no.3:34-35 '63.
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(Grinding machines)

RADUCANU, I.; PASIE, T.

Contributions to the study of the corrosion of mining equipment used for coal containing sulfur. Bul Inst Politeh 26 no.1:53-61 Ja-F '64.

1. Chair of Electrochemistry, Polytechnic Institute, Bucharest.

SCHIOPU, Gheorghe; FASIE, Vladimir

At the Crisana Regional Trusts for Housing Construction: premises for redressing: first measures. Constr Buc 16 no.751:3 30 My '64.

1. Head of the Section, Regional People's Council, Crisana (for Schiopu). 2. Head of the Office for Claims and Worker's Information (for Fasie).

IMAYEV, M.G.; FASKHUTDINOVA, R.A.; Prinimali uchastiye: KHALILOV, V.R., student; SYROVA, A.A., studentka

Synthesis of mixed trialkyl thiophosphates and alkylaryl phosphites. Zhur.ob.khim. 31 no.9:2934-2937 S '61. (MIRA 14:9)

1. Ufimskiy neftyanoy institut.
(Phosphothioic acid) (Phosphorous acid)

CSANADI, Gyorgy, dr.,egyetemi tanar; FASKERTI, Sandor; SZABO, Dezso, dr., a kozlekedestudomanyok kandidatusa, okl.mernok; CSUHAY, Denes; TAKACS, Endre; CSABAI, Rudolf; NAGY, Rudolf; KUTAS, Laszlo, mernok; VASARHELYI, Boldizsar, dr.,a muszaki tudomanyok doktora, tanszek-vezeto egyetemi tanar; KOLLER, Sandor, muegyetemi adjunktus; KALMOKI [redacted], Sandor; GYOMBER, Sandor; TALLO, Gyula;KOZARY, Istvan; SZILAGYI, Lajos; HEGYI, Kalman,okl.mernok; BERCZIK, Andras; MARKI, Laszlo; PALFI, BUDINSZKI, Endre; NAGY, Endre,okl.mernok; SZATMARY, Ferenc; MAGORI, Judit; CSIKHELYI, Bela; MESZLERI, Zoltan; VEROSZTA, Imre; ZSIGA, Sandor; TOROK, Istvan; KONCZ, Laszlo; WESSELY, Ferencne; SZABO, Bela; KOMOROCZI, Lajos; GINTL, Jozsef; CSONTOS, Dezso; JAKAB, Sandor; LOVASZ, Istvan, mernok; KISS, Karoly; [redacted], Karoly

The City Transportation Conference in Szeged. Kozl tud sz 12 no.2: 49-54 F '62.

1. Akademiai levelezo tag, a kozlekedes- es postaugyi miniszter elso helyettese, es "Kozlekedestudomanyi Szemle" szerkeszto bizottsagi tagja (for Csanadi) 2. Kozlekedes- es Postaugyi Miniszterium Muszaki Felugyeleti Osztalyanak vezetoje (for Faskerti) 3. Fovarosi Tanacs Vegrehajto Bizottsaga VIII. Varosrendezesi es Epiteszeti Osztalyanak munkatarsa, es "Kozlekedestudomanyi Szemle" szerkeszto bizottsagi tagja (for Szabo)

(Continued on next card)

CSANADI, Gyorgy --- (Continued) Card 2.
4. Fomernok, Kozlekedes- es Postaugyi Miniszterium Kozlekedespolitikai Osztalyanak munkatarsa (for Csuhay) 5. Kozlekedes- es Postaugyi Miniszterium Autokozlekedesi Vezerigazgatosaganak szakosztalyvezetoje (for Takacs) 6. MAV fointezo, a Kozlekedestudomanyi Egyesulet miskolci teruleti szervezetenek titkara (for Csabai) 7. Fomernok, a Fovarosi Tanacs Vegrehajto Bizottsaga Kozlekedesi Igazgatosaga helyettes vezetoje (for Nagy) 8. Fovarosi Tanacs Vegrehajto Bizottsaga Kozlekedesi Igazgatosaganak fejlesztesi eloadoja (for Kutas) 9. "Kozlekedestudomanyi Szemle" szerkeszto bizottsagi tagja (for Vasarhelyi) 10. Csoportvezeto fomernok, Debrecen m.j. Varosi Tanacs Vegrehajto Bizottsaga Ipari es Kozlekedesi Osztaly (for Kalnoki Kiss) 11. Rendorornagy, Csongrad Megyei Rendorfokapitanysag Kozrendvedelmi Osztalya (for Gyomber) 12. Fomernok, Miskolc m.j. Varosi Tanacs Vegrehajto Bizottsaga Epitesi es Kozlekedesi Osztaly (for Tallo) 13. Fomernok, Kozlekedes-es Postaugyi Miniszterium Utosztalya (for Kozary) 14. Favorosi Tanacs Vegrehajto Bizottsaga VIII. Varosrendezesi es Epitesueti Osztalyanak vezetoje (for Szilagyi) 15. Ut-Vasuttervezo Vallalat Kozlekedesi Osztalya vezetoje (for Hegyi) 16. BUVATI Kozlekedesi es Kozmuszakosztalyanak vezetoje, Budapest (for Berczik) 17. Pecs m.j. varos Tanacsa BV Epitesi es Kozlekedesi Osztalyanak vezetoje (for Marki)

(Continued on next card)

CSANADI, Gyorgy --- (Continued) Card 3.

18. Szeged m.j. Varosi Tanacs Epitesi es Kozlekedesi Osztalyanak fomernoke (for Palfi Budinszki) 19. Budapest Fovarosi Tanacs Melyepitesi Tervezo Vallalat iranyito tervezoje (for Endre Nagy) 20. Debreceni Kozlekedesi Vallalat igazgatoja (for Szatmary) 21. Budapest Fovarosi Tanacs Melyepitesi Tervezo Vallalat tervezomernoke (for Magori) 22. Budapest Fovarosi Tanacs Melyepitesi Tervezo Vallalat tervezomernoke (for Csikhelvi) 23. Miskolci Kozlekedesi Vallalat fomernoke (for Meszleri) 24. Kozlekedes- es Postaugyi Miniszterium Autokozlekedesi Foosztalyanak fomernoke (for Veroszta) 25. Szegedi Kozlekedesi Vallalat fomernoke (for Zsiga) 26. Miskolci Kozlekedesi Vallalat fokonyveloje (for Torok) 27. Debreceni Kozlekedesi Vallalat fomernoke (for Koncz) 28. Penzugyminiszterium foelloadoja (for Wessely) 29. Pecsi Kozlekedesi Vallalat igazgatoja (for Szabo) 30. Epitesugyi Miniszterium Varosrendezesi Foosztalyanak mernoke (for Komoroczi) 31. Fovarosi Villamosvasut Fomernoke (for Lintl)

(Continued on next card)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000412430008-9"

CSANADI, Gyorgy --- (Continued) Card 4.

32. 51-es Autokozlekedesi Vallalat munkatarsa (for Csontos).
33. Ut-Vasuttervezo Vallalat irodavezeto fomernoke (for Jakab).
34. Budapesti Helyiérdekü Vasutak osztalyvezetoje (for Lovasz).
35. Magyar Allamvasutak igazgatohelyettese (for Kiss, Karoly).
36. Magyar Allamvasutak vezerigazgathohelyettese (for Rodonyi).

MEYER, S.O.; MIRGALEYEV, E.Sh.; FASKHUTDINOV, M.F.

Mobile unit for the low-temperature separation of gas. Gaz. delo no.6:13-17 '65. (MIRA 18:6)

1. Bashneftеproyekt.

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SC: U-3042, 11 March 53, (Letopis 'zhurnal 'nykh Statey No. 7 1949)

ZABOLOTSKAYA, L.P., kand.med.nauk; FASLER, L.F., kand.med.nauk (Moskva)

Health education in the system of dispensary care. Sov. zdrav. 20 no.8:63-66 '61. (MIRA 15:1)

1. Iz Instituta sanitarnogo prosveshcheniya (direktor Ye.G.Karmanova).
(HOSPITALS--OUTPATIENT SERVICES) (HEALTH EDUCATION)

ZABLOTSKAYA, L.P., kand.med.nauk (Moskva); FASLER, L.F., kand.med.nauk (Moskva); LELL', R.K., kand.med. nauk (Moskva)

Hygienic instruction of patients with infectious diseases under dispensary observation. Sov. zdrav. 22 no.6:36-39'63. (MIRA 16:9)

1. Iz TSentral'nogo nauchno-issledovatel'skogo instituta sanitarnogo prosveshcheniya (dir. Ye.G.Karmanova)
(COMMUNICABLE DISEASES--PREVENTION)
(HEALTH EDUCATION)

SOKOL'SKIY, D.V.; FASMAN, A.B.

Effect of the amount of skeleton nickel catalyst on the speed of hydrogenation of certain unsaturated alcohols. Vest.AN Kazakh SSR 11 no.9:70-77 S '55. (MLRA 9:1)
(Hydrogenation) (Catalysts, Nickel) (Alcohols)

20-117-5-33/54

AUTHORS: Sokol'skiy, D. V., Member of the Academy of Sciences of the Kazakh SSR, and Fasman, A. B.

TITLE: The Dependence of the Velocity of Hydrogenation on the Amount of Skeleton Nickel Catalyzer (Zavisimost' skorosti gidrirovaniya ot kolichestva skeletnogo nikelevogo katalizatora).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 5, pp. 845-847 (USSR).

ABSTRACT: The purpose of the present paper is to study this problem under model conditions, by means of the potentiometer method. In this way, it is possible to obtain some information on the processes taking place at the surface of the catalyzer. The hydro-carbons Hexine-1 and trans-piperilene were used as experimental substances. The methods employed in this examination were described in a preliminary paper (reference 7). The Hexine-1 was hydrated in absolute ethanole and in H-heptane. The length of the linear domain of the curve, which represents the dependence of the hydration velocity on the amount of nickel increases with an increasing intensity of the mixing. The order of the kinetic curves resembles the zero order in the case of this series of experiments. Rules deviating a little from these were observed in the case of H-heptane. If the amount of catalyzer is small, the velocity of hydration is proportional to a factor greater than the first power

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of the amount of nickel. The specific activity of the catalyzer passes through a maximum, which shifts towards greater amounts of weighed-out nickel at an increasing intensity of mixing. The velocity of hydration is smaller with small amounts of nickel in H-heptane than it is in alcohol, with great amounts of nickel the reverse holds. In the case of a hydration of trans-piperilene in an alcoholic medium only 70 % of the amount of hydrogen theoretically necessary are absorbed, which is very probably connected with the simultaneous occurrence of secondary processes. The order of the kinetic curves approaches the first order. In the subsequent series of experiments the hydration of hexine-1 in alcohol was investigated at an unchanged ratio between the non-boundary compounds and the catalyzer. The specific catalytic activity increases with an increasing amount of catalyzer at a weak mixing, and passes through a maximum at strong mixing. With an increasing intensity of mixing the concentration of the non-boundary compound on the surface of the catalyzer decreases. The hexine-1 almost immediately deprives the catalyzer of a certain proportion of its hydrogen content. Furthermore, a parallel process takes place successively, consisting of a simultaneous hydration of the alkine, alkene and of a saturation of the catalyzer with hydrogen from the gas phase. The measurement of the poten-

The Dependence of the Velocity of Hydrogenation on the Amount of 20-117-5-33/54
Skeleton Nickel Catalyzer.

tial of the catalyzer may be employed with success for the determination of the optimum ratio between the amounts of catalyzer and of the reacting substance.
There are 2 figures, 1 table, and 14 references, 8 of which are Slavic.

SUBMITTED: June 27, 1957.

Card 3/3

FASMAN, A.B., Cand Chem Sci -- (diss) "Effect of the quantity of catalysor on the speed of hydrogenation in the liquid phase." Alma-Ata, 1958, 21 pp with gra hs (Kazakh State Univ im S.M. Kirov) 150 co ies (KL, 50-58, 121)

5(1), 5(3)

AUTHORS: Sokol'skiy, D. V., Fasman, A. B. SOV/153-58-3-20/30

TITLE: The Dependence of the Hydrogenation Velocity on the Catalyst Quantity (Zavisimost' skorosti gidrirovaniya ot kolichestva katalizatora)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 3, pp 111 - 120 (USSR)

ABSTRACT: The above mentioned velocity in the liquid phase is, according to the opinion of most scientists, proportional in the presence of small weighed portions, to the catalyst quantity and approaches the maximum value in the presence of large weighed portions. The aim of the present paper was to investigate the problem mentioned in the title under model conditions by means of the potentiometric method, as this makes the evaluation of the processes on the catalyst surface possible. Hexyne-1 and trans-piperylene served as experimental objects. The carefully purified and rectified hydrocarbons mentioned (Table page 111) were hydrogenated on a special nickel skeleton

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catalyst in a perfected hydrogenation plant (Ref 11) (Fig 1). The catalyst was once more saturated with hydrogen for 1 hour. In the hydrogenation of hexyne-1 in n-heptane and of trans-piperylene in ethanol the specific activity of the catalyst passes through a maximum if the quantity of the latter is changed. The hydrogenation kinetics is determined by three processes related to each other: a)By the hydrogenation of the substance at the expense of the hydrogen of the gas phase. b) By dehydrogenation from the catalyst, and c) By the saturation of the catalyst. The rate of hydrogenation of hexyne-1 in absolute ethanol is, in the presence of relatively small weighed portions of nickel, proportional to the quantity of the latter; this velocity approaches its maximum in the presence of big weighed portions of nickel (Refs 1-5 are proved). The maximum value of the specific catalytic activity occurs with certain values of the catalyst potential, i.e.at a certain degree of filling of the active

surface by reacting molecules. There are 8 figures, 2 tables, and 26 references, 12 of which are Soviet.

ASSOCIATION: Institut khimicheskikh nauk AN Kazakhskoy SSR (Institute of Chemical Sciences, AS Kazakhskaya SSR) Kafedra kataliza i tekhnicheskoy khimii (Chair of Catalysis and Technical Chemistry)

SUBMITTED: October 9, 1957

AUTHORS: Fasman, A. B., Sokol'skiy, D. V. SOV/156-58-4-5/49

TITLE: Velocity and Selectivity Dependence in Heterogeneous Catalytic Reactions on the Catalyst Quantity (O zavisimosti skorosti i selektivnosti geterogennykh kataliticheskikh reaktsiy ot kolichestva katalizatora)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 4, pp 630-634 (USSR)

ABSTRACT: In the present paper the problem of the influence of the catalyst quantity on the kinetics of the mono and bimolecular processes in liquid phases was investigated. The equation (8) was suggested for the determination of the rate of reaction:

$$W = \frac{K_w k' A_o S}{\frac{V}{b} + k'S} \left[\exp \left(- \frac{K_w k' S}{\frac{V}{b} + k'S} t \right) \right] \qquad (8)$$

During the catalytic processes the selectivity was investigated in dependence on the catalyst quantity in three systems. It was found that with small differences in the adsorption properties of the components the rate of reaction is not influenced

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Velocity and Selectivity Dependence in Heterogeneous Catalytic Reactions on the Catalyst Quantity

by change of the catalyst quantity. With different adsorption properties of the components the selectivity of the catalytic process can be controlled by change of the catalyst quantity. There are 28 references, 16 of which are Soviet.

ASSOCIATION: Kafedra kataliza i tekhnicheskoy khimii Kazakhskogo gosudarstvennogo universiteta (Chair of Catalysis and Technical Chemistry at the Kazakh State University)

SUBMITTED: February 11, 1958

FASMAN, A.B.

P. 5

E I BOOK EXPLOITATION SOV/3537

Akademiya nauk Kazakhskoy SSR. Institut khimicheskikh nauk

Trudy, t. 5 (Transactions of the Institute of Chemical Sciences, Kazakh SSR, Academy of Sciences, Vol 5) Alma-Ata, Izd-vo Akademii nauk Kazakhskoy SSR, 1959. 154 p. 1,000 copies printed.

Ed.: N.D. Zhukova; Tech. Ed.: Z.P. Rorokina; Editorial Board of Series: D.V. Sokol'skiy (Resp. Ed.), V.G. Gutsalyuk, and B.V. Suvorov (Resp. Secretary).

PURPOSE: This collection of articles is intended for personnel of scientific research laboratories, laboratories of industrial enterprises, and faculty members of schools of higher education.

COVERAGE: The collection reviews problems of liquid-phase catalytic hydrogenation to upgrade and reactivate various products. Hydrogenation of unsaturated bonds of various types, adsorption of hydrogen on different catalysts, chromatographic separation of mixtures, and the effect of halogen salts of alkali metals on the rate of hydrogenation reactions promoted by various skeleton catalysts are described. Conditions of catalytic hydrogenation

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of natural fat, sunflower oil, and such synthetic products as esters of high-molecular fatty acids are set out. Dehydration of the butane fraction carried out in combination with isomerization is analyzed. Principles of selecting catalysts and regenerating them are reviewed and the formation of adsorption potentials on metal catalysts is explained. Each article presents conclusions drawn on the basis of experimental findings. References accompany most of the articles.

TABLE OF CONTENTS:

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Zakumbayeva, G.D., and D.V Sokol'skiy. Effect of Alkali Metal Halides on the Rate of Hydrogenation of Allyl Alcohol 9

Sokol'skiy, D.V., and N.M. Popova. Adsorption of Hydrogen on Ni/ZnO Catalysts 15

Popova, N.M., and D.V. Sokol'skiy. Hydrogenation of Allyl Alcohol Over Ni/ZnO Catalysts 20

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Luk'yanov, A.T. Problem of Formation of Adsorption Potentials on Metal Catalysts 50

Yerzhanov, A.I., and D.V. Sokol'skiy. Potentiometric Study of Hydrogenation of Benzalacetone Over Skeleton Pd/Ni Catalysts 56

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Shmonina, V.P., K.M. Vlasova, and D.V. Sokol'skiy. Catalytic Reduction of Aromatic Nitro Compounds. Part IX 72

Flid, R.M. [Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V. Lomonosova--Moscow Institute of Fine Chemical Technology imeni M.V. Lomonosov]. Some Principles of Selecting Catalysts for Liquid-Phase Hydration of Acetylene to Acetaldehyde 81

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Shcheglov, N.I., and D.V. Sokol'skiy. Hydrogenation of Acetylene in the Liquid Phase 97

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Sokol'skiy, D.V. Hydrogenation in Solutions 146

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5-25-60

5(1,3,4)

AUTHORS: Fasman, A. B., Khaldeyev, O. D., Sokol'skiy, D. V. SOV/153-2-1-22/25

TITLE: Generation of Triboelectricity During the Catalytic Hydrogenation in Non-conductive Media (O vozniknovenii tribo-elektrichestva pri kataliticheskoy gidrogenizatsii v neprovodyashchikh sredakh)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 1, pp 123-125 (USSR)

ABSTRACT: Static electricity with a potential of several kilovolts is produced by the friction of dielectric liquids at the container- or the tube walls of any shape (Refs 1-3). If conductive substances are added to hydrocarbon, the electric charge first increases and is then reduced and ceases completely at specific resistances of below 10^{10} ohms.cm. Since during the catalytic hydrogenation dielectric liquids (hydrocarbons, ether) are employed by intensely stirring the reaction mass, it was interesting to determine whether friction electricity is herein produced and how it affects the process of hydrogenation. Figure 1 shows an apparatus designed for measuring the electrification potential. Figure 2 gives the charge curves for n-heptane and

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Generation of Triboelectricity During the Catalytic Hydrogenation in Non-conductive Media

its mixtures with absolute ethanol. The electrification attains maximum velocity at a specific resistance $p = 3 \cdot 10^{12}$ ohms.cm. At $p = 10^{11}$ ohms.cm the electrification drops and ceases at 10^{10} ohms.cm (in accordance with reference 4). Apparently, the velocity of charge and discharge depend in various ways on the resistance of the medium. The voltage is rapidly increased by intense stirring. In the next experimental series a skeleton nickel catalyst was employed additionally (method of reference 5). Also in this case maximum voltage occurred at $p = 3 \cdot 10^{12}$ ohms.cm. Consequently, the process of electric charge is intensified by a fine-disperse powder with large surface (≈ 70 $m^2 g$). The action on the course of the process is to be taken into account during the hydrogenation in solvents with high specific resistance. The extension of the interatomic distance by the electrostatic field is bound to increase the reactivity of molecules of unsaturated compounds. There are 2 figures and 7 references, 6 of which are Soviet.

SOV/153-2-1-22/25

Generation of Triboelectricity During the Catalytic Hydrogenation in Non-conductive Media

ASSOCIATION: Institut khimicheskikh nauk AN Kaz.SSR i Kazakhskiy gosudarstvennyy universitet (Institute of Chemical Sciences of the Academy of Sciences of the Kazakh SSR and Kazakh State University)

SUBMITTED: December 20, 1957

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FASMAN, A.B.; SOKOL'SKIY, D.V.

Effect of the amount of the catalyst on the rate of catalytic hydrogenation. Trudy Inst.khim.nauk AN Kazakh.SSR 5:114-145 '59. (MIRA 13:6)

(Catalysts)
(Hydrogenation)

28(4)

AUTHORS: Sokol'skiy, D. V., Fasman, A. B. SOV/32-25-9-47/53

TITLE: Weighing Device for Pyrophoric Catalysts

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 9, p 1141 (USSR)

ABSTRACT: The method described in reference 1 for the hydrostatic weighing of pulverized metallic catalysts has some shortcomings. For example: the dynamometer must be gaged before each measurement, and the reading is taken with a cathetometer or another expensive and complicated device. In the present case, the spring balance was replaced by an ordinary analytical or technical balance and a special device was used (Fig). The latter consists in principle of a small tiltable glass cup which is suspended from one of the scale-beams by means of a wire with a weight, and which is immersed in a liquid. The weight is so chosen that the total weight on the respective scale-beam is greater than that on the other beam with the scale-pan. After the weighing, the catalyst is poured out together with the liquid in the glass cup and is thus not exposed to air. Semi-automatic ADV-200 scales proved to be especially suited for these weighings. The net weight of the

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catalyst is calculated by an equation. The specific weight must be known and can be determined by special methods. There are 1 figure and 1 Soviet reference.

ASSOCIATION: Institut khimicheskikh nauk Akademii nauk Kazakhskoy SSR (Institute of Chemical Sciences of the Academy of Sciences of the Kazakh SSR)

FASMAN, A.B.; GOLODOV, V.A.; SOKOL'SKIY, D.V.

Kinetics and mechanism of the catalytic hydrogenation of the liquid phase. Part 1: Influence of various physical factors on the kinectics of the hydrogenation process. Kin. i kat. 2 no.1:144-153 Ja-F '61. (MIRA 14:3)

1. Kazakhskiy gosudarstvennyy universitet imeni S.M. Kirova, Khimicheskoy falul'tet.
(Hydrogenation) (Chemical reaction, Rate of)

FASMAN, A.B.; SOKOL'SKIY, D.V., akademik; BYKOV, A.V.; SHCHUROV, K.A.
NURUSHEV, A.

Potentiometric study of catlytic hydrogenation in dielectric media. Dokl. AN SSSR 142 no.4:874-877 F '62. (MIRA 15:2)

1. Kazakhskiy gosudarstvennyy universitet im. S.M.Kirova.
2. AN KazSSR (for Sokol'skiy).
(Hydrogenation)
(Catalysts)
(Electrochemistry)

FASMAN, A.B.; GOLODOV, V.A.; SOKOL'SKIY, D.V.

Catalytic reduction of quinones by carbon monoxide in the liquid phase. Trudy Inst.khim.nauk AN Kazakh.SSR 8:137-149 '62.
(MIRA 15:12)

(Quinone) (Carbon monoxide)

SOKOL'SKIY, D.V., akademik; FASMAN, A.B., kand. khimicheskikh nauk;
BYKOV, A.V.

Measuring the potential of a suspended powdered catalyst.
Vest. AN Kazakh. SSR 18 no.10:45-54 O '62.
(MIRA 17:9)

1. Akademiya nauk Kazakhskoy SSR (for Sokol'skiy).

TEMKIN, O.N.; FASMAN, A.B.; DURGAR'YAN, S.G.; ROZOVSKIY, A.Ya.

Conference on the catalytic reactions in the liquid phase. Kin.i kat. 4 no.1:168-174 Ja-F '63. (MIRA 16:3)
(Catalysis—Congresses)

FASMAN, A.B.; SOKOL'SKIY, D.V.

Kinetics and the mechanism of catalytic hydrogenation in the liquid phase. Part 2: Some regularities in the hydrogenation of unsaturated hydrocarbons on a skeletal nickel catalyst. Kin.i kat. 4 no.5: 736-745 S-O '63. (MIRA 16:12)

1. Kazakhskiy gosudarstvennyy universitet imeni Kirova.

FASMAN, A.B.; SOKOL'SKIY, D.V.; BYKOV, A.V.; SHCHUROV, K.A.; KHARLOV, A.P.

Automation of the laboratory studies of heterogeneous catalysis.
Izv. vys. ucheb. zav.; khim. i khim. tekh. 6 no.3:511-516 '63.
(MIRA 16:8)

1. Kazakhskiy gosudarstvennyy universitet imeni Kiroga, kafedra kataliza i tekhnicheskiy khimii.
(Catalysis)
(Laboratories—Equipment and supplies)
(Automatic control)

FASMAN, A.B.; GETMANTSEVA, I.P.; SOKOL'SKIY, D.V.

Measurement of the gradient of hydrogen concentration in hydrogenation of solutions. Zhur. fiz. khim. 37 no.9:2100-2105 S '63. (MIRA 16:12)

1. Kazakhskiy gosudarstvennyy universitet imeni Kirova.

FASMAN, A.B.; PADYUKOVA, G.L.; SOKOL'SKIY, D.V., akademik

Mechanism of carbon monoxide adsorption and conversion in the liquid phase. Dokl. AN SSSR 150 no.4:856-858 Je '63. (MIRA 16:6)

1. Kazakhskiy gosudarstvennyy universitet imeni Kirova.
2. Akademiya nauk Kazakhskoy SSR (for Sokol'skiy).
(Carbon monoxide) (Adsorption)

GOLODOV, V.A.; FASMAN, A.B.; SOKOL'SKIY, D.V., akademik

Catalytic reduction of p-benzoquinone by carbon monoxide in the liquid phase. Dokl. AN SSSR 151 no.1:98-101 Jl '63. (MIRA 16:9)

1. Kazakhskiy gosudarstvennyy universitet im. S.M.Kirova.
2. AN Kazakhskoy SSR (for Sokol'skiy).
(Benzoquinone) (Carbon monoxide) (Palladium catalysts)

FASMAN, A.B.; SOKOL'SKIY, D.V., akademik; SHUROV, K.A.

Polarization characteristics of circulatory powder electrodes.
Dokl. AN SSSR 153 no.3:653-656 N '63. (MIRA 17:1)

1. Abkhazskiy gosudarstvennyy universitet im. S.M. Kirova.
2. AN KazSSR (for Sokol'skiy).

FASMAN, A. B.; GOLODOV, V. A.; SOKOL'SKIY, D. V., akademik

Kinetics and mechanism of the catalytic reduction of quinones by carbon monoxide in solutions. Dokl. AN SSSR 155 no. 2: 434-437 Mr '64. (MIRA 17:5)

1. Kazakhskiy gosudarstvennyy universitet im. S. M. Kirova.
2. AN Kazakhskoy SSSR (for Sokol'skiy).

FASMAN, A.B.; DORFMAN, Ya.A.; SOKOL'SKIY D.V.

Kinetics and the mechanism of liquid-phase catalytic hydrogenation. Part 3: Macrokinetics of reduction over a colloidal palladium catalyst. Kin. i kat. 5 no.4:716-723 Jl-Ag '64.

(MIRA 17:11)

1. Kazakhskiy gosudarstvennyy universitet imeni Kirova.

GOLODOV, V.A.; FASMAN, A.B.; SOKOL'SKIY, D.V.

Effect of halide ions on the kinetics of the homogeneous catalytic reduction of p-benzoquinone with carbon monoxide. Zhur. VKHO 9 no.3:351-352 '64. (MIRA 17:9)

FASMAN, A.B.; KUTYUKOV, G.G.; SOKOL'SKIY, D.V., akademik

Kinetics and the mechanism of K_2PdBr_4 reduction by carbon monoxide in aqueous solutions. Dokl. AN SSSR 158 no.5:1176-1179 O '64.
(MIRA 17:10)

1. Kazakhskiy gosudarstvennyy universitet im. S.M.Kirova, Alma-Ata.
2. AN KazSSR (for Sokol'skiy).

GOLUBOV, V.A.; KUTYUKOV, G.G.; FASMAN, A.B.; SOKOL'SKIY, D.V.

Reaction of H_2PdCl_4 with carbon monoxide in aqueous solutions. Zhur. neorg. khim. 9 no.10:2319-2324 O '64.

(MIRA 17:12)

1. Kazakhskiy gosudarstvennyy universitet im. S.M. Kirova.

KABIYEV, T.; FASMAN, A.B.; MOLYUKOVA, N.I.; SOKOL'SKIY, D.V., akademik

Promotion of a skeletal nickel catalyst by molybdenum. Dokl. AN SSSR 159 no.5:1087-1090 D '64 (MIRA 18:1)

1. Kazakhskiy gosudarstvennyy universitet im. S.M. Kirova.
2. AN KazSSR (for Sokolovskiy).

L 3661-66 EWP(e)/EWT(m)/ETC/EWG(m)/T/EWP(t)/EWP(z)/EWP(b) IJP(c) DS/JD/HW
ACCESSION NR: AP5018455 UR/0364/65/001/007/0868/0871
541.136

AUTHOR: Kabiyev, T.; Fasman, A. B.; Isabekov, A.; Chernousova, K. T.

TITLE: The effect of conditions of the genesis of Ni-Al alloy on the electrochemical activity of hydrogen diffusion electrodes.

SOURCE: Elektrokhimiya, v. 1, no. 7, 1965, 868-871

TOPIC TAGS: nickel alloy, catalytic activity, electrochemistry, hydrogen gas

ABSTRACT: The conditions of the production of Ni-Al alloys may effect the extent to which such compounds as $NiAl_3$, Ni_2Al_2, NiAl and Ni_3Al have been leached out. The rate of leaching of these compounds and their catalytic activity are significantly different, and at the same time the activity of the catalyst is significantly impaired by the presence of aluminum. During hydrogenation of unsaturated compounds and in hydrogen diffusion electrodes a catalyst prepared from 1:1 Ni-Al alloy is preferred. It has the greatest stability and the necessary mechanical strength. In the present report such catalysts were prepared under different cooling rates. The effect of the conditions of crystallization on the resulting structure and activity of the skeletal nickel catalyst was investigated. The current-

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voltage characteristics of different electrodes are shown in Fig. 1 of the Enclosure. Electrodes were tested at 1.5 atm pressure of hydrogen in 30% KOH at 30—100° C. The polarizing current density comprised 100 ma/cm^2. It was found that the activity of the catalysts produced from Ni-Al alloys prepared from different methods depends on their physical parameters: grain size, extent of dendrite heterogeneity and the completeness of removal of aluminum. It was found that the activity of catalysts is directly related to the content of $NiAl_3$ phase in the starting alloy. During sintering of electrodes a partial interaction of carbonyl nickel with aluminum eutectic and with $NiAl_3$ phase takes place. Consequently, leaching is impaired. Thus, the electrochemical activity of the diffusion electrode is a function of the ratio of active nickel to bound nickel. The sharp improvement in the electrode characteristics upon electrochemical activation is apparently a result of the increase of this ratio, since all phases containing aluminum are destroyed. When the alloy is crystallized in the furnace at 300° C the reaction Ni_2Al_3 + eutectic → $NiAl_3$ is more complete. The area occupied by this phase is greater than under any other conditions. An intermetallic compound is produced with the greatest extent of dendritic heterogeneity. Such high dendritic heterogeneity facilitates a more complete leaching of the appropriate phases and increases the lifespan and stability of the electrodes. Orig. art. has: 2 tables

L 3661-66
ACCESSION NR: AP5018455

3

and 3 figures.

ASSOCIATION: Kazakhskiy gosudarstvennyy universitet im. S. M. Kirova (Kazakh State University)

94,55

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NO REF SOV: 002 OTHER: 003

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L 3661-66

ACCESSION NR: AP5018455

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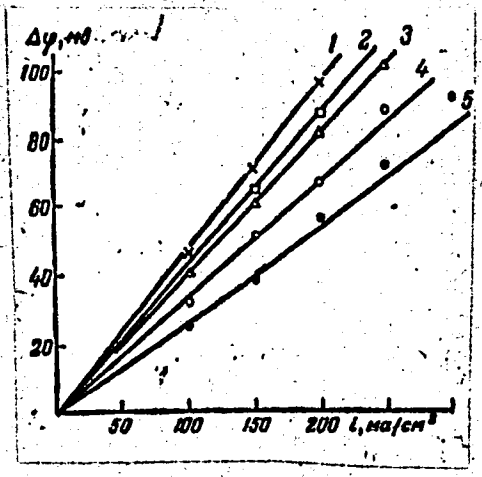

Fig. 1. Current-voltage characteristics of hydrogen diffusion electrodes at 88° C: 1--tempered from liquid; 2--standard; 3--4 hrs at 800° C; 4--cooled in air; 5--10 hrs at 300° C

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FASMAN, A.B.; TANEYEVA, G.V.; SOKOL'SKIY, D.V.

Measurement of the potential of powdered catalysts in dielectric media. Part 1. Elektrokhimiia 1 no.8:900-905 Ag '65. (MIRA 18:9)

1. Kazakhskiy gosudarstvennyy universitet imeni S.M.Kirova.